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ABSTRACT

Using comprehensive survey data from two graduating cohorts, this study explored the impact of increasing student diversity on university students' educational experience and their skill development. Data came from 1,293 respondents, 44% of whom were from the 1989 graduating cohort, and the balance from the 1994 graduate cohort. The findings of this study show that growing student diversity increased students' interracial interaction markedly, contributed to their questioning of fundamental beliefs and values, and enhanced students' academic achievement, skill development, and educational satisfaction. While speaking strongly for the educational value of increasing student diversity on university campuses, this study reveals issues worthy of special attention. The paper also discusses implications of these findings and suggestions for further research. (Contains 4 figures, 7 tables, and 27 references.) (Author/SLD)

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# Size Matters:

# Exploring the Educational Value of Increasing Student Diversity

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**Size Matters: Exploring the Educational Value of Increasing Student Diversity**


Abstract

Using comprehensive survey data from two graduating cohorts, this study explored the impact of increasing student diversity on university students' educational experience and their skill development. The findings of this study showed that growing student diversity increased markedly students' interracial interaction, contributed to their questioning of fundamental beliefs and values, and enhanced students' academic achievement, skill development, and educational satisfaction. While speaking strongly for the educational value of increasing student diversity on university campuses, this study revealed issues worthy of special attention. Discussion of the findings, implications, and suggestions for further research are included.

# Size Matters: Exploring the Educational Value of Increasing Student Diversity

## Introduction

The rapidly changing makeup of the U.S. population is increasingly transforming the United States into a multiracial and multicultural society (Antonio, 2001a; Bucher, 2000; Glazer, 2001; Welsh, 1998). To prepare students well for an increasingly pluralistic society, educators hold a strong belief that a diverse student body is essential to providing a challenging and enriching college experience for all students (Alger, 1997; Rudenstine, 1996a, 1996b, 2001).

In support of this claim, a small, growing scholarly literature on the topic is emerging. For instance, research shows that creating a diverse learning community enhances students' cultural awareness, overall satisfaction with college, critical thinking capacities, communication skills, leadership abilities, and commitment to promoting racial understanding (Antonio, 2001a, 2001b; Astin, 1993; Bowen & Bok, 1998; Hurtado, 1999; Pascarella & Terenzini, 1991; Smith, 1997; Toutkoushian & Smart, 2001). Nevertheless, empirical research addressing the effect of more versus less student diversity on students' educational experience and their skill development is sparse.

Deploying alumni survey data from two graduating cohorts, this study had three major objectives. First, it sought to determine the extent to which increasing student diversity contributed to students' interracial interaction and their questioning of beliefs and values during the course of their undergraduate studies. Second, it attempted to identify the extent to which increasing student diversity benefited students in their academic achievement and their skill development. Third, it intended to examine the extent to which increasing student diversity enhanced students' satisfaction with their

undergraduate education. By so doing, this study aimed to reveal issues worthy of attention and inform the current debate on the educational value of increasing student diversity.

In the following sections, we review related literature. Then we describe our data source and analytical procedures. Third, we report the results of our study. Finally, we discuss its limitations and implications and draw our conclusion.

## Review of Related Literature

The fundamental rationale for a diverse student body on university campuses is its educational value (Rudenstine, 1996a, 1996b, 2001). Arguing for the need for a diverse student body in higher education institutions, Rudenstine expounded the importance of diversity from a historical perspective. According to him, the deliberate pursuit of student diversity on university campuses could be traced back to the mid-19$^{th}$ century, when higher education leaders recognized a need for universities to actively recruit students from different parts of the country to provide a challenging and democratic education for all people concerned.

Not until the Congress passed the Civil Rights Act of 1964 and the Higher Education Act of 1965, however, did higher education institutions begin to vigorously pursue diversity in the student and faculty body on their campuses (Antonio, 2001a; Terenzini, Cabrera, Colbeck, Bjorklund, & Parente, 2001). As society is becoming increasingly pluralistic, the pursuit of student diversity is motivated not only by its capacity to enhance the educational process but also by the need for preparing capable leaders for a diverse society (Bowen & Bok, 1998).

The belief that the diversity of the student body makes a difference in the education of students rests on three critical premises (Hurtado, 1999). First, college peers are an important part of the educational process in any educational environment. Second, student interactions among diverse peers are associated with a broad range of educational outcomes. Third, colleges can create the conditions to maximize the learning that occurs in an environment with a diverse student population.

Intense interest in the educational benefits of a diverse student body has generated a growing body of research literature. Research shows that a diverse student body provides students with multiple opportunities for interracial and cross-cultural interactions that contribute to the development of a wide array of positive educational outcomes. Specifically, interracial interactions enhance students' social life and lead to student development in cultural awareness (Antonio, 2001a; Astin, 1993), close interracial friendships (Antonio, 2001b), commitment to racial understanding, and open discussions of racial issues (Astin, 1993; Chang, 1999). Also, interracial interactions contribute to students' improvement in communication and leadership abilities (Antonio, 2001a; Toutkoushian & Smart, 2001) and problem-solving and group skills (Terenzini et al., 2001). Finally, interracial interactions produce higher levels of academic development and greater satisfaction with college (Astin, 1993; Bowen & Bok, 1998; Gurin, 1999; Hurtado, 1999).

The educational outcomes of diversity are desirable for a democratic society, but the effort to create a diverse student body has been challenged by lawsuits in recent years. Two well-known legal cases--Regents of the University of California v. Bakke (1978) and Hopwood v. State of Texas (1996)--have exerted tremendous influence on higher

education. In his landmark opinion regarding the Bakke case, Justice Powell strongly argued that the educational value of student diversity in higher education constituted a compelling interest and hence that some consideration of racial and ethnic background characteristics in the admissions process was constitutionally permissible. However, the U.S. Court of Appeals for the Fifth Circuit ruled that the University of Texas could not consider race as a factor in its law-school admissions in the Hopwood case and rejected the pursuit of student diversity as a compelling educational interest.

In defending the compelling need for diversity in higher education, Gurin (1999) linked the value of diversity to an institution's core mission and made a telling argument for the value of diversity in higher education. She distinguished three types of diversity: (a) structural diversity, (b) classroom diversity, and (c) informal interactional diversity. Her findings showed that structural diversity had significantly positive effects on both classroom and interactional diversity and that students experiencing the most racial diversity in and out of the classroom demonstrated the greatest academic and intellectual growth. Although structural diversity relies on classroom and interactional diversity to make its impact effective, the degree of interaction with diverse peers appears proportional to the number of students from socially and culturally different groups (Antonio, 2001b; Chang, 1999; Hurtado, Dey, & Treviño, 1994).

In light of the above research findings, we assume that creating a more diverse student body is likely to provide students with more opportunities for interracial interactions and broaden their horizons. While we seek to provide empirical evidence for our assumption, we have in mind that one major goal that higher education institutions have long been striving to achieve is to improve students' skills in a wide array of areas

and prepare them to be effective citizens and capable leaders. Although many factors might impinge on students' skill development, we believe that increasing student diversity could provide more opportunities for students to interact across racial/ethnic groups and challenge their existing belief and value systems. Such interracial interaction and questioning of beliefs and values might ultimately influence students' intellectual growth and skill development.

## Data and Methodology

### Data, Instrument, and Sample

The data used for this study were drawn from comprehensive alumni/ae surveys of former students from the 1989 and 1994 graduating cohorts of a leading private research university, administered 5/10 years after graduation. Designed to gather the perceptions of former students on a variety of issues, the survey instrument, a pencil-and-paper, multiple-choice questionnaire, contained questions covering a wide range of student characteristics. For the purpose of this study, only questions related to students' demographics, interactions with students during college, questioning beliefs, academic honors, skill development, and satisfaction with undergraduate education were used in the analysis.

The sample for this study included a total of 1293 respondents, 44% of the graduates were from the 1989 cohort, and 56% from the 1994 cohort. The 1989 cohort included students from five racial/ethnic groups: Asian-Americans (2.6%), African-Americans (2.2%), Hispanic-Americans (0.9%), Native Hawaiians (0.1%), and Caucasian-Americans (94.2%). Compared with students in the 1989 cohort, the representation of students of color, especially Asian-American and African-American

students, was more than doubled in the 1994 cohort, while the representation of Caucasian-American students decreased by 8%. As the sample representation of students from other races was too small to produce statistically significant results in each cohort, this study focused on three major racial groups: (a) Asian-Americans, (b) African-Americans, and (c) Caucasian-Americans. As previous research on the effects of diverse initiatives focuses on African-American students in comparison to Caucasian-American students, less attention has been given to issues and challenges confronted by students from other races (Smith, 1997). Since Asian-American student population is fast growing on university campuses, it seems necessary to examine their educational experiences as well in order to create an optimal diverse college environment for all students.

**Variables**

For the purpose of this study, race/ethnicity and year of graduation were used as control variables. The primary dependent variable was students' assessment of their alma mater's contribution to their skill development in 21 areas on a 5-point scale (where 1 indicated "not at all important" and 5 "very important"). The key independent variables consisted of student interactions, questioning beliefs, and educational satisfaction. Student interactions were measured on a 5-point scale (where 1 indicated "none" and 5 "most"). To examine the impact of student interactions on skill development, we differentiated two types of student interactions: (a) interaction with students of the same racial/ethnic group, and (b) interaction with students from different racial/ethnic groups. The variable "questioning beliefs" was made up of the total number of topics students seriously questioned while they were undergraduates. Finally, students' educational

satisfaction was assessed on a 5-point scale (where 1 indicated "very dissatisfied" and 5 "very satisfied").

**Analytical Procedures**

As some of the 21 skill development items in the survey were actually measuring the same construct, a principal components factor analysis (with varimax rotation) was conducted to examine their structure. Based on the exploratory factor analysis, the 21 skill development items were grouped into five broad categories (Table 1): (a) Creative Thinking, (b) Broad Knowledge, (c) Quantitative Abilities, (d) Self Awareness, and (e) Leadership Skills. This five-factor solution explained 52.6% of the total item variance and produced scales with internal consistency reliabilities ranging from 0.60 to 0.70. The resulting five composite measures of skill development were used, where appropriate, in the analyses that followed.

Descriptive analysis was conducted on the sample data from both the 1989 and 1994 cohorts. Comparisons of the two cohorts by race were made with respect to student interactions, questioning beliefs, academic honors, skill development, and educational satisfaction. Also, regression analysis was conducted to examine the impact of student interactions, questioning beliefs, and educational satisfaction on skill development.

## Results

**Descriptive Results**

**Student Interactions.** In the survey, respondents were asked to indicate the extent to which they had interaction with students from different racial/ethnical groups when they were in college on a 5-point scale where 1 indicated "none" and 5 "most." Their responses are summarized in Figure 1, which presents the percentage of

respondents from each cohort who reported having substantial interaction (i.e., 4-5 on the 5-point scale) with students of the same race or from other different racial/ethnical groups. It is of interest to note a number of changes in the patterns of student interactions that occurred in the 1994 cohort in comparison to the 1989 cohort. First, there was a 12% increase (up from 43% to 55%) in the percentage of Asian-American students in the 1994 cohort who reported having substantial interaction with students of the same race. On the other hand, there was an approximately 5% decrease (down from 100% to 95%) in the percentage of Asian-American students in the 1994 cohort who reported having substantial interaction across racial/ethnic groups. Second, there was a marked 22% increase (up from 73% to 95%) in the percentage of African-American students in the 1994 cohort who reported having substantial interaction with students of the same race. Meanwhile, there was an approximately 9% decrease (down from 91% to 82%) in the percentage of African-American students who reported having substantial interaction across racial/ethnic groups. Third, the percentage of Caucasian-American students who reported having substantial interaction with students of the same race remained almost unchanged; however, those reported having substantial interaction across racial/ethnic groups increased by roughly 16% (up from 25% to 41%).

Viewing these results, one may wonder why there was a decrease in the percentage of Asian-American and African-American students, but an increase in the percentage of Caucasian-American students, who reported substantial interracial interaction. One explanation is that, as noted by Bowen and Bok (1998), a larger diverse student body provided variety in campus life. With a larger Asian-American and African-American student community in the 1994 cohort, the odds were greater for these students

to find people with similar backgrounds and interests. Hence the percentage of Asian-American and African-American students who interacted with students of the same race increased while those who interacted across racial/ethnic groups decreased. The same is true for Caucasian-American students. The small number of students of color in the 1989 cohort limited the chances for Caucasian-American students to engage in substantial interracial interaction. The larger number of Asian-American and African-American students on campus in the 1994 cohort appeared to have provided more opportunities for Caucasian-American students to interact across racial/ethnic groups.

**Questioning Beliefs.** Respondents were also asked to mark whether they ever seriously questioned or rethought their beliefs or values in a list of seven areas provided in the survey. Their responses to this question are summarized in Table 2. In comparison to students in the 1989 cohort, there was a marked increase in the percentage of students from all racial groups in the 1994 cohort who reported serious questioning of their beliefs/values during college in almost all selected areas. A number of findings in this respect are of notable interest. First, the percentage of Asian-American students who seriously questioned their beliefs about other religions and beliefs about people with other sexual orientations increased by roughly 12% and 31%, respectively. Second, there was a decrease in the percentages of African-American students who reported serious questioning of their own moral values and beliefs about the nature of humans or society by approximately 6% and 14%, respectively. However, the percentages of African-American students increased substantially in four areas, with increases ranging from approximately 22% to 33%. Remarkably, more African-American students not only seriously questioned their own religious beliefs, but they also questioned beliefs about

other religions, beliefs about other races, and beliefs about people with other sexual orientations. Third, the percentage of Caucasian-American students who seriously questioned their beliefs increased in all areas, with substantial increases in questioning beliefs about other races and beliefs about people with other sexual orientations. Fourth, the percentages of students from all racial groups in the 1994 cohort who considered their questioning of beliefs about other racial/ethnic groups and beliefs about people with different sexual orientations produced the most valuable insights increased markedly. Finally, students from all racial groups in the 1994 cohort, as suggested by their higher average number of topics they questioned during college, widely challenged the belief and value systems of society as well as their own.

Table 3 presents the percentage of students who considered a list of activities that contributed to their effective questioning of beliefs. Compared with their corresponding peers in the 1989 cohort, a larger percentage of African-American and Caucasian-American students, but not Asian-American students, considered that lectures or course-related readings contributed to their questioning of beliefs. However, an increasing number of students from all three racial groups reported that contacts with students from different races, socioeconomic classes, and similar backgrounds contributed to their effective questioning of beliefs. The increases in these three areas ranged from roughly 4% to 29%.

The above findings apparently indicate that growing student diversity contributed to students' questioning of beliefs and values during the course of their undergraduate studies. With more racial/ethnic diversity on campus, students had more opportunities to interact across racial/ethnic groups and exposed themselves to different perspectives and

cultural values (Antonio, 2001a, 2001b; Chang, 1999). Meanwhile, other factors might also have played a role in the increase of students in the 1994 cohort who reported serious questioning of beliefs and values. For instance, beliefs about people with different sexual orientations might not have been a pressing issue in the 1980s, but they could have evolved into an issue of wide interest in the 1990s. Moreover, campus programs that were widely implemented in the 1990s, such as racial/cultural awareness programs or workshops, might have enhanced students' scope of knowledge in these areas. Finally, with a larger diverse student body, not only course-related projects or activities but also extracurricular activities might have involved students in interracial interactions. As dining and studying are two most common types of interracial activities (Antonio, 2001a), students might also have had chances to know other students from racially/ethnically different groups in dorms or dining halls. Formal or informal conversations that occurred in these places might have shed new light on issues which students had been pondering for a long time.

**Academic Honors.** In the survey, students were also directed to report honors (such as Latin honors, Phi Beta Kappa, Sigma Xi, and honors in major) they received as a senior. As the survey data did not include information about the actual academic performance of students, we used academic honors as proxy indicators of academic performance. Although this measure was far from ideal or perfect, it could at least give us a hint of how former students fared academically.

Overall, as indicated in Figure 2, significantly more Asian-American and Caucasian-American students in both the 1989 and 1994 cohorts received some type of academic honors than the corresponding African-American students. Also, compared

with students in the 1989 cohort, there was an overall increase of students in the 1994 cohort who received academic honors, except Asian-American students. Specifically, while the percentage of Asian-American students who received academic honors decreased by roughly 7%, the percentage of the corresponding African-American and Caucasian-American students increased by approximately 14% and 12%, respectively.

There are two possible reasons for this change in academic performance. First, students might have been admitted with increasingly better academic qualifications. Second, efforts to engage students intellectually on the part of the university might have had an impact on students' academic achievements. However, African-American students in either the 1989 cohort or the 1994 cohort were less comparable to their corresponding Asian-American and Caucasian-American peers in academic performance. The gap between the racial groups in academic performance still seems large. This suggests there is still a need to make greater efforts to improve the academic achievements of African-American students as well as the students at large.

**Skill Development.** In the survey a question asked respondents to indicate how much their undergraduate institution contributed to their personal development in 21 areas. To compare the ratings of college's contribution to personal development by all three racial groups, we added up the total ratings of the 21 skill development items. As indicated in Figure 3, in the 1989 cohort, Caucasian-American students ($M = 68.96$, $SD = 11.34$) rated significantly higher the contribution of college to personal development than African-American students ($M = 60.20$, $SD = 7.60$). There was no significant difference between Caucasian-American and Asian-American students ($M = 69.54$, $SD = 9.79$), nor was there any significant difference between Asian-American and African-American

students. In the 1994 cohort, there was no significant difference in the ratings of the contribution of college to personal development between groups (for African-Americans, $M = 72.69$, $SD = 10.27$; for Asian-Americans, $M = 71.90$, $SD = 11.91$; and for Caucasian-Americans, $M = 71.72$, $SD = 10.75$).

The control of race showed that both African-American and Caucasian-American students in the 1994 cohort reported significantly greater gains in their skill development than their respective peers in the 1989 cohort; however, no significant gains were evident for Asian-American students in the 1994 cohort. To compare the magnitude of the two cohorts in skill development, we calculated the size of gain for the two cohorts using the mean of the 1994 cohort minus the mean of the 1989 cohort and then divided by the standard deviation of the 1989 cohort. The results showed that the size of gain for African-American students (1.64) was roughly seven times larger than the size of gain for Asian-American students (0.24) and Caucasian-American students (0.24).

To identify specific areas in which African-American students had remarkably improved their skills, we examined their skill development using the resulting five composite measures from factor analysis. The results showed that African-American students in the 1994 cohort in comparison to their African-American peers in the 1989 cohort had tremendous gains in four areas: (a) cultivating their creative thinking abilities, (b) broadening their scope of knowledge, (c) extending their quantitative abilities, and (d) developing their leadership skills (Figure 4).

**Satisfaction with Education.** As shown in Table 4, while African-American students ($M = 3.75$, $SD = 0.75$) in the 1989 cohort indicated significantly lower levels of satisfaction with their undergraduate education than the corresponding Caucasian-

American students ($M = 4.41$, $SD = 0.79$), no significant difference among all racial groups was evident in the 1994 cohort. They were all highly satisfied with their undergraduate education, as indicated by the average rating of 4.17 for Asian-Americans, 4.33 for African-Americans, and 4.42 for Caucasian-Americans on a 5-point scale (where 5 indicated "very satisfied" and 1 "very dissatisfied").

In light of research showing interracial interaction has positive impact on overall college satisfaction (Astin, 1993, Chang, 1999), we conducted a correlation analysis on students' educational satisfaction and their interactions. The correlation for the data revealed that there was no significant correlation between educational satisfaction and student interactions for the 1989 cohort ($r = +.054$, $p > .05$). For African-American students in the 1989 cohort, the correlation was even insignificantly negative ($r = -.137$, $p > .05$). However, the correlation for the data indicated that there was a significant, positive correlation between educational satisfaction and student interactions for the 1994 cohort ($r = +.129$, $p = .001$). An examination of the correlation by race in the 1994 cohort showed that educational satisfaction was significantly, positively correlated with student interactions for both Asian-American students ($r = +.433$, $p < .01$) and Caucasian-American students ($r = +.115$, $p < .01$); for African-American students, educational satisfaction was positively, although insignificantly, correlated with student interactions ($r = +.126$, $p > .05$).

The positive correlation between educational satisfaction and student interactions for the 1994 cohort appears to support previous research findings (Astin, 1993, Chang, 1999). With a larger diverse student body, students of different racial/ethnic groups had more opportunities to contact with other students, which seemed to have enhanced their

educational satisfaction. This positive finding may also relate to the improvement of the campus climate in the 1990s in comparison to the campus climate in the 1980s when racial conflict was prevalent on U.S. college campuses (D'Souza, 1991; Hurtado, 1992). With an increasing number of students of color on campus in the 1990s, institutional leaders might have focused more on student needs and created an environment conducive to both interracial interaction and learning.

**Regression Analysis on Skill Development**

To identify factors that might have influenced students' skill development, we conducted a set of simple regression analyses, using student interactions, questioning beliefs, educational satisfaction, race/ethnicity, and year of graduation as independent variables. As indicated in Table 5, student interactions, questioning beliefs, and educational satisfaction, were significant predictors of skill development for both the 1989 and 1994 cohorts. When race/ethnicity was used in the regression analyses, it had a marginally significant but negative association with African-American students' skill development in the 1989 cohort; however, it totally failed to make contribution to the explanation of the variance associated with students' skill development in the 1994 cohort. This absence of positive contribution to skill development for the 1994 cohort suggests that with students with better academic preparations from different racial groups being admitted into the campus, race no longer was an issue in this respect.

When the two cohorts were considered as a whole, the regression analysis showed similar results, with the addition of year of graduation as a significant predictor of skill development. This indicated that students in the 1994 cohort rated their skill development higher than their counterparts in the 1989 cohort.

The latter finding seems to support that after being out of college for years, students might be more critical toward their undergraduate education (Belfield, Bullock, & Fielding, 1999). They might also have assessed the quality of their education based on what they had accomplished or failed to achieve in life. Thus, their current personal situations might have affected their retrospective perceptions of their undergraduate education. For instance, people holding an important and lucrative position might be more favorably impressed with their undergraduate education. Conversely, those without a lucrative or rewarding job might be less favorably impressed with their undergraduate education. Moreover, those being out of college for longer years might have less favorable opinions of their undergraduate education, for the skills they had acquired in college might no longer adequately meet their current needs. In contrast, those being out of college for a shorter period of time might have much more favorable opinions of their alma mater, for the skills they had acquired in college could satisfactorily help them achieve their present goals. Judging by their higher ratings of educational satisfaction, respondents in the 1994 cohort might have indeed rated their satisfaction with their education provided by their alma mater more favorably than did respondents in the 1989 cohort.

After the initial regression analysis, we conducted further exploratory analysis to determine the effect of student interactions, questioning beliefs, and educational satisfaction on specific aspects of skill development for each of the three racial groups. The results showed that student interactions, questioning beliefs, and educational satisfaction appeared to have significant impact on skill development, but the degree of its impact varied with racial groups and cohorts. As indicated in Table 6, for the 1989

cohort, student interactions, questioning beliefs, and educational satisfaction seemed to have no significant impact on the skill development of Asian-American students; they were insignificantly, weakly associated with their skill development. For African-American students, interracial interaction had a negative effect in expanding their scope of knowledge. In the case of Caucasian-American students, both interracial interaction and educational satisfaction were significantly associated with a wide array of skill development categories. Moreover, questioning beliefs had significantly positive impact on Caucasian-American students' acquisition of broad knowledge.

As indicated in Table 7, for the 1994 cohort, interaction with students of the same racial/ethnic group appeared to be significantly associated with Asian-American students' development of quantitative abilities and self awareness. Furthermore, interracial interaction was positively associated with their acquisition of broad knowledge and development of leadership skills. Finally, educational satisfaction was significantly associated with Asian-American students' skill development in four areas: (a) creative thinking, (b) quantitative abilities, (c) self awareness, and (d) leadership skills. For African-American students, interracial interaction was significantly, positively associated with the development of their leadership skills. For Caucasian-American students, interaction with students of the same racial or ethnic group had only marginally positive impact on self awareness and leadership skills. However, interracial interaction as well as educational satisfaction, were significantly, positively associated with Caucasian-American students' development of all five aspects of skill development. In addition, questioning beliefs had positive impact on Caucasian-American students' acquisition of broad knowledge and development of self awareness and leadership skills. In sum,

interracial interaction and educational satisfaction appeared to have developed Caucasian-American students' creative thinking and leadership skills and quantitative abilities as well as extended their scope of knowledge and enhanced their self awareness. What's more, the impact of interracial interaction and educational satisfaction appeared to be almost the same for Caucasian-American students in both cohorts. Finally, questioning beliefs seemed to have played a significant role in extending Caucasian-American students' knowledge and in enhancing their self awareness and leadership skills.

**Limitations**

This study extends our knowledge of student interactions on skill development by taking into consideration interaction with students of the same racial/ethnic group and interaction with students from different racial/ethnic groups. Also, it has examined the extent to which questioning beliefs and educational satisfaction influenced students' skill development. However, when viewing the positive results of this study, one needs to keep in mind its limitations. First, as the two graduating cohorts were five years apart, things that occurred during these five years might have had positive or negative impact on former students' retrospective perceptions of their previous educational experience. Second, this study examined Asian-American, African-American, and Caucasian-American students' college experience, but the sample sizes for both Asian-American and African-American students were relatively small; the small sample sizes not only made it difficult to detect significant results, but they might also have biased the findings. Third, because the academic records of students were unavailable, this study relied mainly on students' self-reported gains in skill development rather than on more objective measures of student learning such as standardized test scores. Fourth, because of its focus on the

impact of student interactions, questioning beliefs, and educational satisfaction on students' skill development, it did not explore the correlation of other variables, such as gender and campus climate, that might have a significant impact on the patterns of student interactions. Fifth, this study focused on the characteristics of former students in a highly selective, leading private research institution. As student educational experiences may vary with types of institutions, the undergraduate collegiate experiences of students at other types of institutions may be somewhat different. Finally, this study did not examine with whom students were interacting within the same race or with whom students were interacting across racial/ethnic groups. Also, it did not examine the contexts in which student interactions occurred. Student interactions may take place in or outside of the classroom. For instance, it may occur in students' academic or extracurricular activities, such as class discussions, group projects, student government, or residential hall life. To address the necessary conditions that foster student interactions that are positively associated with educational outcomes and examine the relevant contexts in which such student interactions are likely to occur might provide further insight into skill development related to student interactions.

## Discussion

The results of this study show that growing student diversity provided more opportunities for Caucasian-American students to interact across racial/ethnic groups. Meanwhile, increasing student diversity also increased the chances for students of color to interact with peers of the same race. Moreover, the results of this study show that interracial interaction correlated positively with academic achievement and skill development. While it was negatively associated with the acquisition of broad knowledge

for African-American students in the 1989 cohort, for instance, interracial interaction had a significant, positive effect on the development of their leadership skills. In fact, the results of this study demonstrate that interracial interaction had a positive effect on the development of leadership skills for students from all three racial/ethnical groups in the 1994 cohort. This finding supports previous research on the contribution of interracial interaction to students' improvement in leadership abilities (Antonio, 2001a; Toutkoushian & Smart, 2001).

In addition, the results of this study indicated that interracial interaction had significant, positive effects on Caucasian-American students' skill development in a wide array of areas in both cohorts, but its positive effects on Asian-American and African-American students' skill development appeared to be limited. This finding is worthy of special attention, for it seems to indicate that the potential educational benefits of interracial interaction may not equally accrue to all groups of students (Chang, 1999). This finding also suggests that it is not simply structural diversity of the student body that matters, but what students learn from their interracial interaction. Hence how to create opportunities to involve students more meaningfully in interracial interaction becomes a challenge for institutions that are genuinely interested in promoting student diversity.

The results of this study also revealed that the number of Asian-American students who received academic honors in the 1994 cohort decreased when compared with that of the 1989 cohort, while the number of the corresponding African-American and Caucasian-American students increased markedly. Moreover, unlike their African-American and Caucasian-American peers, Asian-American students in the 1994 cohort reported no greater gains in skill development than did their Asian-American peers in the

1989 cohort. Research shows that Asian-American students were likely to report lower gains than students in other race/ethnicity categories in their learning/knowledge (Toutkoushian & Smart, 2001). In light of such research findings, the absence of progress on the part of Asian-American students in academic achievement and skill development also sends signals to institutions that their needs and concerns could no longer afford to be left unattended or unexamined.

Based on the results of this study, we make the following recommendations to institutions that are truly interested in promoting student diversity.

First, institutions should create a favorable climate in which students from all racial groups can fully develop their potentials and reap the rewards of diversity. Once enrolled in academic programs and residing on campus, students from different racial and ethnic groups become members of a large community. Institutions must actively seek ways to maximize the educational value of growing student diversity and make it more productive and beneficial to the entire learning community (Gurin, 1999; Light, 1999). As Chang (1999) noted in his study of the educational impact of racial diversity, "merely enrolling underrepresented students of color in institutions that are not prepared to successfully educate them or under conditions that impede education will at best only succeed in limited ways, and at worst, exacerbate tension and conflict" (p. 392). As the climate of an organization affects how people behave and may play a significant role in facilitating learning (Milem, 2001), institutional leaders must make commitment to creating a welcoming and caring climate and environment to optimize the educational benefits of increasing student diversity. A favorable campus climate will not only promote interracial interaction and discussion of issues, but it also will foster greater

tolerance and appreciation for diverse populations and reduce the likelihood of negative tension and conflict between racial/ethnic groups (Chang, 1999; Hurtado, 1992). Developing programmatic initiatives, such as cultural awareness programs and diverse course requirements, is likely to achieve such goals (Terenzini et al., 2001).

Second, institutions should make efforts to enhance classroom diversity for effective learning. Structural diversity is important to an enriching education, but it relies on classroom diversity and interactional diversity to make its effect pronounced (Gurin, 1999). Research shows that classroom diversity, especially the medium level of classroom diversity, was positively related to the development of students' problem-solving and group skills (Terenzini et al., 2001). As students of color are likely to learn more effectively with interactive instructional methods, institutions should encourage faculty to design innovative curricula and use interactive and student-centered approaches to enhance learning in a multicultural classroom (Hurtado, 1992, 1996; Milem, 2001). Moreover, as students of color are likely to have more contacts with staff members because of their on-campus employment, institutions must recognize that staff members also have a role to play in enhancing students' learning experience. Doing so will likely reduce problems that may arise from racial differences and turn differences in perspective into educational advantages.

Third, institutions should provide mentoring and guidance to students who may need them. This study shows that African-American students in 1994 cohort had greater gains in personal development than their African-American peers in the 1989 cohort. Their gains were approximately seven times larger than the gains of the corresponding Asian-American and Caucasian-American students. This demonstrates that increasing the

number of African-American students on campus does make a difference in their educational experience. However, this study also shows that African-American students were less comparable to Asian-American and Caucasian-American students in academic achievements. This indicates that it is one thing to enroll students in a highly selective university, but it is quite another to help them survive and thrive in an academically challenging environment. One may be a top student in a small town or community. But when one goes to college, one has a new group of peers who may come from various places. Thus one faces new challenges in a new environment. This is especially true for African-American students. They may find academic life extremely challenging because they might have had less than optimal preparation for college due to a variety of reasons. For this very reason, compared with their peers, African-American students may need additional mentoring and guidance.

Finally, institutions should actively seek ways to engage students in interracial interaction. One of the findings of this study is that interaction with students of the same race is significantly related to merely a limited number of educational outcomes. Its impact on skill development was far less powerful than that of interracial interaction. As society is becoming increasingly diverse, students, no matter what their ethnicity is, are likely to be involved in interracial activities. They need therefore to make efforts to go beyond their interaction with students of the same racial/ethnic group and embrace a multicultural society. Hence institutions should actively seek ways to engage students in meaningful interracial activities and optimize the benefits of growing student diversity. Only by doing so can institutions make increasing student diversity "contribute powerfully to the process of learning" (Rudenstine, 1996b, p. 50). When students are

actively involved in interracial and cross-cultural interactions, they will likely maximize and reap the potential educational benefits of increasing student diversity. To this end, students, especially students of color, should be active in expressing their ideas and views to enhance the effort of being interactive and make their interaction beneficial not only to themselves but also to other people involved.

## Conclusion

The results of this study show that the percentage of students who seriously questioned their beliefs increased markedly in the 1994 cohort. This indicates that a larger diverse student body provided more opportunities for students to interact with diverse peers. Such interracial interactions further benefited students in their academic achievement and skill development. While speaking strongly for the need for diversity in higher education, the findings by no means imply that one should lower admissions standards to create a diverse student body only for the sake of diversity. Structural diversity is only the first step in a journey of a thousand miles to capitalize on the educational value of multicultural diversity. Once students from different racial and ethnic groups are admitted into university campuses, institutions should actively seek ways to maximize the educational value of growing student diversity and make it more productive and beneficial to the entire learning community. Otherwise, pursuing greater diversity will serve solely as a symbolic academic interest and consequently lose its legitimacy that motivates people to strive for an ever better world. In other words, absent proactive and policy changes that keep institutional structures aligned with changing student body needs, increasing diversity will unlikely help fully achieve an institution's educational and developmental goals.

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**TABLE 1**
**Factor Structure for Learning Outcome Items**

| | Factor Loadings | | | | | |
|---|---|---|---|---|---|---|
| Items | Creative Thinking | Broad Knowledge | Quantitative Abilities | Self Awareness | Leadership Skills | Total |
| Write effectively | .695 | | | | | |
| Communicate well orally | .694 | | | | | |
| Formulate creative ideas | .671 | | | | | |
| Acquire skills independently | .629 | | | | | |
| Acquire broad knowledge | | .720 | | | | |
| Arts appreciation | | .652 | | | | |
| Multifaceted perspectives | | .599 | | | | |
| Awareness of social problems | | .563 | | | | |
| Identify moral and ethical issues | | .499 | | | | |
| Foreign language ability | | .469 | | | | |
| Understand role of science | | | .741 | | | |
| Quantitative abilities | | | .712 | | | |
| Use computers | | | .595 | | | |
| In-depth knowledge of a field | | | .546 | | | |
| Integrate ideas and information | | | .438 | | | |
| Develop self-esteem | | | | .741 | | |
| A healthy lifestyle | | | | .708 | | |
| Understand self | | | | .523 | | |
| Relate well to diversity | | | | | .623 | |
| Function effectively as a team | | | | | .478 | |
| Lead and supervise tasks | | | | | .438 | |
| Item Means | 3.674 | 3.361 | 3.384 | 3.322 | 3.311 | 3.421 |
| Cronbach's Alpha | 0.696 | 0.697 | 0.663 | 0.632 | 0.598 | 0.828 |
| Initial Eigenvalues | 5.164 | 2.103 | 1.412 | 1.333 | 1.040 | |
| Variance Explained | 24.592 | 10.016 | 6.724 | 6.346 | 4.954 | 52.633 |

**TABLE 2**
**Percent of Students Who Seriously Questioned Their Beliefs or Values during College, by Race and Cohort**

| Topics | 1989 Cohort | | | 1994 Cohort | | |
|---|---|---|---|---|---|---|
| | Asian | African | Caucasian | Asian | African | Caucasian |
| 1. Own political beliefs | 50.0 (30.0) | 41.7 (22.2) | 64.1 (15.7) | 54.8 (8.8) | 52.8 (13.3) | 69.7 (15.6) |
| 2. Own religious beliefs | 35.7 (10.0) | 25.0 (0.0) | 49.9 (12.7) | 40.5 (17.6) | 47.2 (13.3) | 52.5 (12.8) |
| 3. Own moral values | 42.9 (20.0) | 50.0 (11.1) | 55.7 (14.8) | 50.0 (8.8) | 44.4 (16.7) | 61.8 (14.7) |
| 4. Beliefs about the nature of humans or society | 57.1 (40.0) | 75.0 (66.7) | 67.7 (34.1) | 57.1 (41.2) | 61.1 (23.3) | 76.4 (33.2) |
| 5. Beliefs about other religions | 42.9 (0.0) | 25.0 (0.0) | 63.3 (11.4) | 54.8 (5.9) | 58.3 (0.0) | 64.7 (6.5) |
| 6. Beliefs about other races | 42.9 (0.0) | 41.7 (0.0) | 50.4 (6.1) | 45.2 (3.9) | 63.9 (23.3) | 61.9 (8.6) |
| 7. Beliefs about people with other sexual orientations | 21.4 (0.0) | 25.0 (0.0) | 46.9 (5.2) | 52.4 (11.8) | 58.3 (10.0) | 62.6 (8.6) |
| Number of topics questioned | 2.93 (2.43) | 2.83 (2.48) | 3.97 (2.29) | 3.55 (2.54) | 3.86 (2.36) | 4.49 (2.22) |

*Note*: In the upper part of the table, numbers in parentheses represent the percentages of students who reported the areas in which their questioning of beliefs produced the most valuable insights. In the lower part of the table, numbers represent the average total of topics questioned by students, and standard deviations are in parentheses.

**TABLE 3**
**Percent of Students Who Reported Activities That Contributed to the Questioning of Beliefs, by Race and Cohort**

| | 1989 Cohort | | | 1994 Cohort | | | Difference between '94 and '89 Cohorts | | |
|---|---|---|---|---|---|---|---|---|---|
| | Asian | African | Caucasian | Asian | African | Caucasian | Asian | African | Caucasian |
| Lectures or course-related readings | 42.9 | 33.3 | 54.7 | 33.3 | 50.0 | 58.4 | -9.6 | 16.7 | 3.7 |
| Contact with faculty outside class | 14.3 | 25.0 | 14.7 | 14.3 | 11.1 | 18.6 | 0.0 | -13.9 | 3.9 |
| Off-campus study program | 0.0 | 8.3 | 8.5 | 2.4 | 5.6 | 9.3 | 2.4 | -2.7 | 0.8 |
| Off-campus internships | 0.0 | 0.0 | 5.2 | 0.0 | 11.1 | 5.7 | 0.0 | 11.1 | 0.5 |
| Community service | 14.3 | 16.7 | 20.7 | 16.7 | 22.2 | 29.3 | 2.4 | 5.5 | 8.6 |
| Employment during college | 14.3 | 0.0 | 10.8 | 4.8 | 16.7 | 12.0 | -9.5 | 16.7 | 1.2 |
| Contact with student(s) from | | | | | | | | | |
| another country | 7.1 | 8.3 | 12.2 | 16.7 | 13.9 | 17.6 | 9.6 | 5.6 | 5.4 |
| a different religion | 7.1 | 8.3 | 34.4 | 28.6 | 25.0 | 30.9 | 21.5 | 16.7 | -3.5 |
| a different region | 28.6 | 33.3 | 30.0 | 28.6 | 27.8 | 33.3 | 0.0 | -5.5 | 3.3 |
| **a different race** | **21.4** | **33.3** | **26.1** | **42.9** | **44.4** | **34.3** | **21.5** | **11.1** | **8.2** |
| **a different socioeconomic class** | **28.6** | **33.3** | **24.2** | **33.3** | **47.2** | **32.4** | **4.7** | **13.9** | **8.2** |
| **a similar background** | **14.3** | **25.0** | **30.0** | **42.9** | **52.8** | **33.9** | **28.6** | **27.8** | **3.9** |

**TABLE 4**
**Average Ratings of Satisfaction with Education, by Race and Cohort**

| | | 1989 Cohort | | | | 1994 Cohort | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | *N* | *M* | *SD* | *F* | *N* | *M* | *SD* | *F* |
| Satisfaction with education | Asian | 14 | 4.36 | 0.63 | 4.09* | 42 | 4.17 | 0.99 | 2.43 |
| | African | 12 | 3.75 | 0.75 | | 36 | 4.33 | 0.83 | |
| | Caucasian | 512 | 4.41 | 0.79 | | 599 | 4.42 | 0.73 | |

* $p \leq 0.05$. ** $p \leq 0.01$. *** $p \leq 0.001$.

## TABLE 5
**Regression Analysis on Overall Skill Development by Cohort**

| Independent Variables | 1989 Cohort | | | | 1994 Cohort | | | | Both Cohorts | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *B* | Beta | Constant | $r^2$ | *B* | Beta | Constant | $r^2$ | *B* | Beta | Constant | $r^2$ |
| Student Interactions | 1.380 | 0.230 | 50.049 | 0.053*** | 1.298 | 0.232 | 53.292 | 0.054*** | 1.433 | 0.250 | 50.471 | 0.063*** |
| Questioning beliefs | 0.784 | 0.159 | 65.681 | 0.025*** | 0.583 | 0.120 | 69.308 | 0.014** | 0.731 | 0.149 | 67.453 | 0.022*** |
| Educational satisfaction | 7.945 | 0.564 | 34.025 | 0.318*** | 8.250 | 0.578 | 35.599 | 0.334*** | 8.136 | 0.568 | 34.832 | 0.323*** |
| Race | | | | | | | | | | | | |
| Asian | 0.577 | 0.008 | 69.961 | 0.012* | 0.181 | 0.004 | 71.721 | 0.000 | 0.881 | 0.017 | 70.452 | 0.000 |
| African | -8.761 | -0.110 | | | 0.965 | 0.021 | | | -0.541 | -0.010 | | |
| Year of graduation | | | | | | | | | 3.032 | 0.134 | 68.789 | 0.018*** |

*Note*: In the regression analysis, *Race* and *Year of graduation* were dummy coded. Specifically, for *Race*, Asian = 1, African = 1, and Caucasian = 0. For *Year of graduation*, 1989 = 0, and 1994 = 1.

* $p \leq 0.05$. ** $p \leq 0.01$. *** $p \leq 0.001$.



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**TABLE 6**
**Regression Analysis on the Impact of Interracial Interaction, Questioning Beliefs, and Educational Satisfaction on Skill Development by Race, 1989 Cohort**

| | Creative Thinking | | Broad Knowledge | | Quantitative Abilities | | Self Awareness | | Leadership Skills | |
|---|---|---|---|---|---|---|---|---|---|---|
| Independent Variables | Adj. $R^2$ | Betas | Adj. $R^2$ | Betas | Adj. $R^2$ | Betas | Adj. $R^2$ | Betas | Adj. $R^2$ | Betas |
| *Asian* | -.109 | | -.381 | | -.274 | | -.070 | | -.117 | |
| Same as self | | -.201 | | -.141 | | .061 | | -.022 | | .040 |
| Different from self | | .336 | | .266 | | .322 | | .372 | | .416 |
| Questioning beliefs | | -.134 | | .016 | | .028 | | .196 | | -.298 |
| Educational satisfaction | | .215 | | -.070 | | -.017 | | .043 | | .215 |
| *African* | -.081 | | .283 | | -.244 | | .224 | | -.400 | |
| Same as self | | .065 | | .138 | | .183 | | -.355 | | .169 |
| Different from self | | -.675 | | -.785* | | -.341 | | -.466 | | .349 |
| Questioning beliefs | | .305 | | .366 | | .212 | | -.157 | | -.548 |
| Educational satisfaction | | .039 | | .014 | | -.420 | | .337 | | -.181 |
| *Caucasian* | .239 | | .164 | | .184 | | .256 | | .197 | |
| Same as self | | .016 | | -.024 | | .013 | | .054 | | .023 |
| Different from self | | .110** | | .079 | | .135** | | .131*** | | .257*** |
| Questioning beliefs | | .050 | | .240*** | | .030 | | .019 | | .027 |
| Educational satisfaction | | .470*** | | .314*** | | .403*** | | .482*** | | .350*** |

*Note*: Same as self = Interaction in college with students of the same race/ethnicity. Different from self = Interaction in college with students from different racial/ethnic groups. Questioning beliefs = number of topics questioned during college.
* $p \leq 0.05$. ** $p \leq 0.01$. *** $p \leq 0.001$.

**TABLE 7**
**Regression Analysis on the Impact of Interracial Interaction, Questioning Beliefs, and Educational Satisfaction on Skill Development by Race, 1994 Cohort**

| | Creative Thinking | | Broad Knowledge | | Quantitative Abilities | | Self Awareness | | Leadership Skills | |
|---|---|---|---|---|---|---|---|---|---|---|
| Independent Variables | Adj. $R^2$ | Betas | Adj. $R^2$ | Betas | Adj. $R^2$ | Betas | Adj. $R^2$ | Betas | Adj. $R^2$ | Betas |
| *Asian* | .346 | | .251 | | .237 | | .426 | | .470 | |
| Same as self | | .031 | | .186 | | .339* | | .301* | | .138 |
| Different from self | | .113 | | .334* | | .066 | | .174 | | .374** |
| Questioning beliefs | | .118 | | .224 | | .043 | | -.054 | | -.117 |
| Educational satisfaction | | .583*** | | .309 | | .462** | | .577*** | | .468*** |
| *African* | -.001 | | -.056 | | .060 | | -.093 | | .134 | |
| Same as self | | .023 | | -.061 | | .124 | | .041 | | .228 |
| Different from self | | -.120 | | .040 | | .186 | | .102 | | .450* |
| Questioning beliefs | | .239 | | .238 | | .293 | | .142 | | .295 |
| Educational satisfaction | | .292 | | .143 | | .282 | | .136 | | .042 |
| *Caucasian* | .200 | | .106 | | .165 | | .223 | | .198 | |
| Same as self | | .031 | | .028 | | .032 | | .079* | | .090* |
| Different from self | | .100** | | .122** | | .096* | | .079* | | .180*** |
| Questioning beliefs | | .019 | | .125** | | .032 | | .079* | | .111** |
| Educational satisfaction | | .431*** | | .273*** | | .390*** | | .452*** | | .375*** |

*Note*: Same as self = Interaction in college with students of the same race/ethnicity. Different from self = Interaction in college with students from different racial/ethnic groups. Questioning beliefs = number of topics questioned during college.
* $p \leq 0.05$. ** $p \leq 0.01$. *** $p \leq 0.001$.

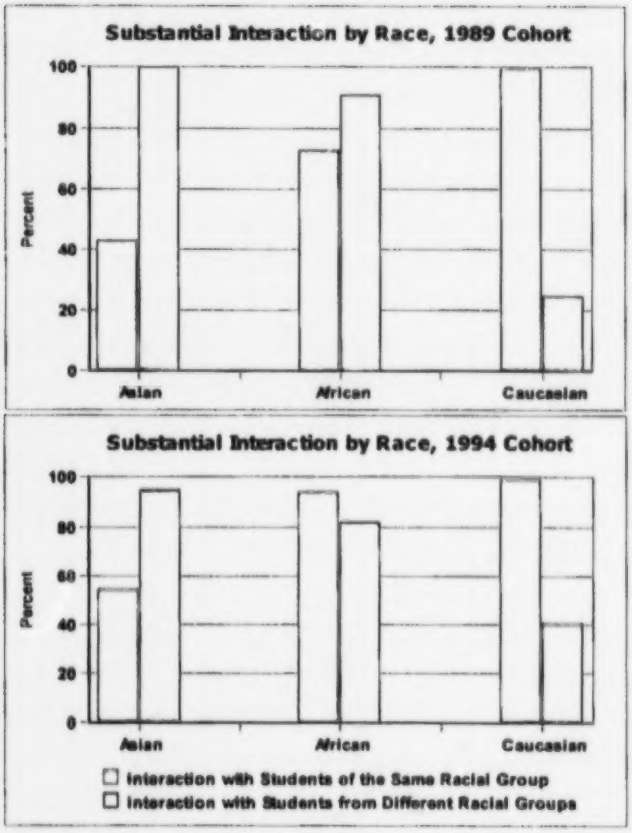


Figure 1. Percent of Students Who Reported Having Substantial Interactions with Other Students, by Race and Cohort

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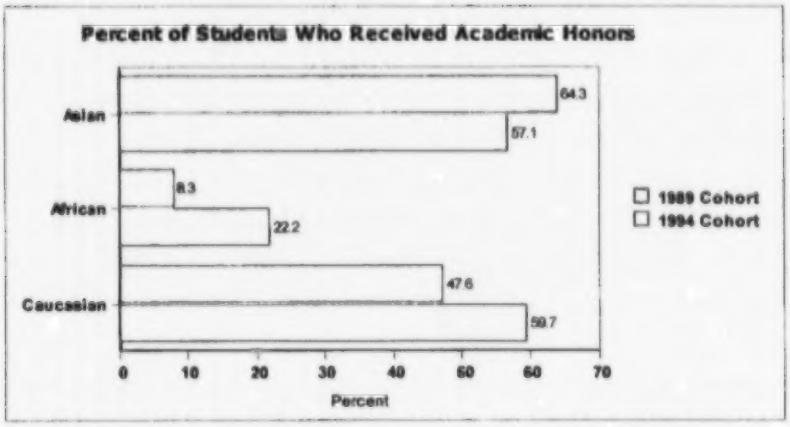


Figure 2. Percent of Students Who Received Academic Honors, by Race and Cohort

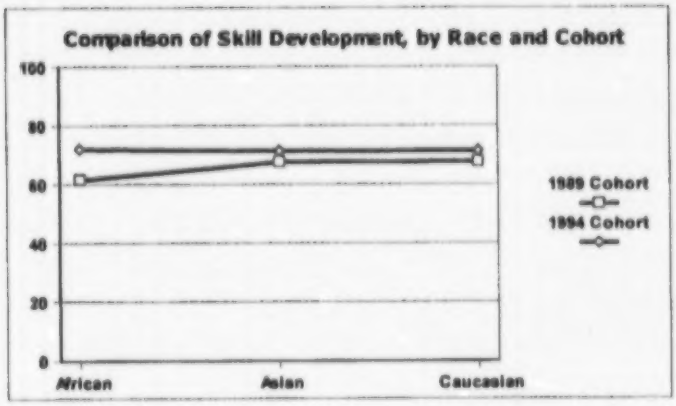


Figure 3. Comparison of Skill Development, by Race and Cohort

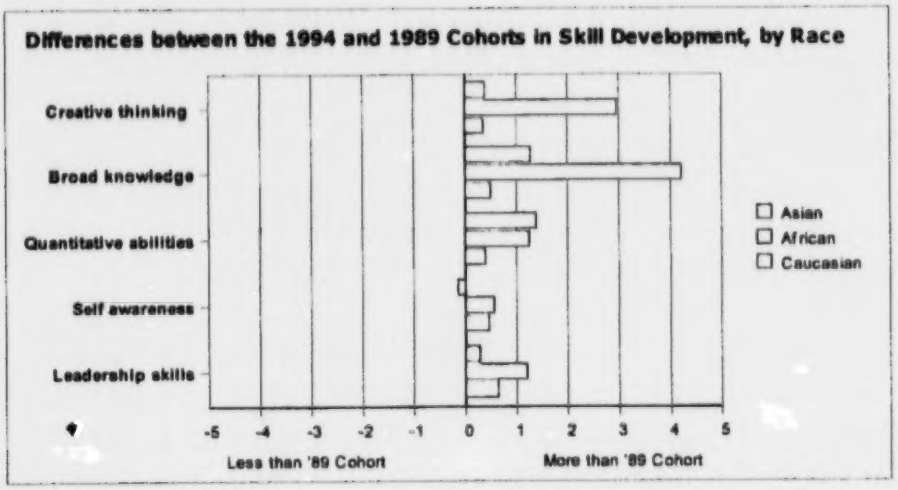


Figure 4. Differences between the 1994 and 1989 Cohorts in Skill Development, by Race

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